U.S. Patent Application No. 09/761,561
Request for Reconsideration dated April 22, 2004
Reply to Advisory Action dated February 9, 2004

REMARKS/ARGUMENTS

Reconsideration and continued examination of the above-identified application are respectfully requested.

At page 2 of the Advisory Action, the Examiner indicates that the rejection of claims 1-4, 8, 11, 16, 18, and 21 over Poddymov et al. or Sanchez et al. has been withdrawn. The applicants and undersigned appreciate the Examiner's indication that the rejection of claims 1-4, 8, 11, 16, 18, and 21 over Poddymov et al. and Sanchez et al. has been withdrawn.

At page 2 of the Advisory Action, the Examiner rejects claims 1-4, 7-16, and 18-30 under 35 U.S.C. § 112, second paragraph, for failing to set forth the subject matter which the applicants regard as the invention. According to the Examiner, the applicants have made no showing that it is an inherent property of the composition and the method that the complex is solid in an aqueous solution. Furthermore, the Examiner states that a solution cannot include a solid. According to the Examiner, a mixture of solid and liquid in which the solid does not dissolve in the liquid is a dispersion. The Examiner further states that if the complex of the present application remains a solid in an aqueous liquid, then the claims should indicate the same. For the following reasons, this rejection is respectfully traversed.

With respect to the Examiner's arguments that applicants provide no showing that it is an inherent property of the composition and method that the complex is a solid in an aqueous solution, the applicants respectfully disagree. The applicants clearly state in the specification and in Fig. 1 of the present application that a differential scanning calorimetry (DSC) spectrum is used to provide information about the structure of a composition. One skilled in the art would know that a DSC spectrum is used for analyzing solids and not liquids. Therefore, one skilled in the art would

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conclude that the complex is in a solid state.

With respect to the Examiner's comments that a solution, by definition, cannot include a solid, none of the claims of the present application specifically recite that a complex of the claimed invention is a solid in an aqueous solution. This term was simply utilized by the applicants in a response to an Office Action to explain the term dispersion. One skilled in the art, by reading the phrase "forming a product that is a solid in an aqueous solution," would clearly understand that the solid product is present in a solution, e.g., a dispersion. It is important for the Examiner to appreciate that the phrase "forming a product that is a solid in an aqueous solution" is simply one way of explaining this point.

The specification of the present application, at page 11, line 21 – page 12, line 3, specifically states that the mixture was stirred and insoluble material was observed. This insoluble dispersant has microbial killing activity. Therefore, the specification clearly refers to the product of the claimed invention as a dispersant that includes microbial killing activities. No need exists to amend the claims to further recite that the product of the claimed invention is a dispersant. Accordingly, this rejection should be withdrawn.

At page 2 of the Advisory Action, the Examiner maintains the rejection of claim 13 under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Poddymov et al. or Sanchez et al. According to the Examiner, Poddymov et al. expressly describes that the complexes are formed at a pH below 3, although at this pH, the formation of the complexes is significantly diminished. The Examiner then states that since the applicants have not shown that "about 2" excludes a pH of below 3, the prior art meets the claimed invention. The Examiner also states that in the previous amendment, the applicants argued that precipitation

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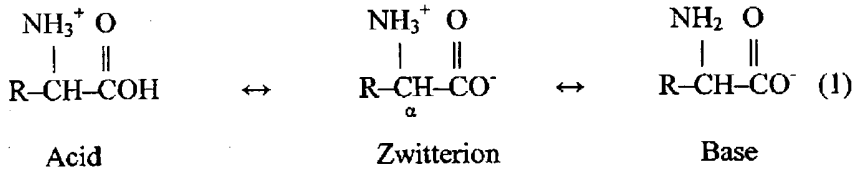
complexation occurs at a pH of 2 or less. However, the claims of the present application recite a pH of about 2 or less.

The Examiner also states that the applicants provide no support that the protons in Sanchez et al. are replaced by a metal, which forms very stable complexes so that pH measurements cannot yield accurate values of stability constants. For the following reasons, this rejection is respectfully traversed.

As the Examiner indicates, Poddymov et al. specifically states that the formation of complexes significantly decreases below a pH of 3. Thus, one skilled in the art, by reading Poddymov et al., would not be motivated to form a composition below a pH of 3. In fact, given that in Poddymov et al. the complex formation in methionine was measured at a pH of 4, one skilled in the art, by reading Poddymov et al., would form a composition at a pH of 4 or above. Thus, Poddymov et al. does not teach or suggest the claimed invention, wherein precipitation complexation occurs at a pH of about 2 or less. The behavior of Poddymov et al., which forms complexes in basic solutions, can best be explained as follows:



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One skilled in the art, by reading the above formula, would understand that the amino acid exists as a zwitterion. In an acidic solution, the α-carbon becomes protonated, which prevents any complexing from occurring by preventing the OH group of the carboxylic acid from forming a bond. Therefore, the glycine and aspartic acid of Poddymov et al. only form complexes in basic solutions at a pH greater than 6.5, where the carboxylic group acts as a Lewis-acid and can form a

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complex with a metal. Similarly, the concept described above also holds true for methionine. In summary, given that Poddymov et al. states that methionine compositions decrease significantly below a pH of 3, and the fact that the formula of Poddymov et al. shows that the glycine and aspartic acid only form complexes in basic solutions at a pH greater than 6.5, one skilled in the art, by reading these limitations, would not go below a pH of 3. Accordingly, Poddymov et al. teaches away from the claimed invention.

With respect to the Examiner's statement that in the previous amendment, the applicants argued that complexation occurs at a pH of 2 or less, while the claims recite that complexation occurs at a pH of about 2 or less, clearly the phrase "a pH of 2 or less" is a typographical error and should have read "a pH of about 2 or less." The pH of about 2 or less is fully supported by the present application and in the claims.

With respect to Sanchez et al., the arguments set forth in the Amendment dated January 30, 2004 are fully supported by the method utilized to calculate the stability constant of Sanchez et al. It is important for the Examiner to appreciate that the stability constant of Sanchez et al. is calculated by the method described in Ringbom et al. (Ringbom, A., & Harju L., *Anal. Chim. Acta.*, 59, 33 (1972)) (*See also* Sanchez et al., pp. 456, 457, and Fig. 1).

With respect to the Examiner's comment that the applicants provide no support that the protons in Sanchez et al. are replaced by a metal, which forms very stable complexes so that pH measurements cannot yield accurate values of stability constants, the method described in Ringbom et al., at pages 33 and 34, fully supports the applicants' conclusion.

The method described in Ringbom et al., at pages 33 and 34, states that "most of the constants determined in recent decades were determined by means of pH measurements, whereas

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pM measurements were much less used. Protons are liberated when a metal ion replaces hydrogen ions in the ligand and the concentration of the ligand not bound to metal ions can be determined from the change in pH. The method gives good results for complexes of medium stability, but if very stable complexes are formed, the replacement of protons will be so complete that pH measurements cannot yield accurate values of stability constants." (Emphasis added.) Accordingly, the applicants' arguments with respect to Sanchez et al. are fully supported by Ringbom et al.

The method described in Ringbom et al. is also utilized to calculate the stability constant of Poddymov et al. Since Poddymov et al. relates to stability constants for the amino acids at higher pH values, it would be easier to completely replace the hydrogen ions with the metal. However, at lower pH values, methionine complexations cannot occur since it is difficult to replace the hydrogen ion with the metal. Accordingly, this rejection should be withdrawn.

CONCLUSION

In view of the foregoing remarks, the applicants respectfully request reconsideration of this application and the timely allowance of the pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 50-0925. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,

Luke A. Kilyk
Reg. No. 33,251

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